A Project Report on

"A Study on consumer's perspective towards E- vehicles in India"

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Department of Management Sciences & Research (DMSR)

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In partial fulfilment for the award of the degree of

Master of Business Administration

Submitted by

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Under the Guidance of

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Academic Year 2023-24

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Academic Year 2023-24

CERTIFICATE

This is to certify that **Ms. RISHITA PARAG JAIN** has submitted the project reporttitled, **"A Study on consumer's perspective towards E- vehicle in India. "**, under the guidance of **Guide name** towards the partial fulfillment of **MASTER OF BUSINESS ADMINISTRATION** degreeexamination.

It is certified that he/she has ingeniously completed his/her project as prescribed by **DMSR, G. S. College of Commerce and Economics, Nagpur, (NAAC Reaccredited "A" Grade Autonomous Institution)** affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

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Academic Year 2023-24

DECLARATION

I, **RISHITA PARAG JAIN** here-by declare that the project with title "**A Study on consumer's perspective towards E- vehicle in India.**" has been completed by me under the guidance of **Name of guide** in partial fulfillment of **MASTER OF BUSINESS ADMINISTRATION**degree examination as prescribed by **DMSR, G. S.College of Commerce and Economics, Nagpur, (NAAC Re-accredited "A" Grade Autonomous Institution)** affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

This project was undertaken as a part of academic curriculum and has not been submitted for any other examination and does not form the part of any other course undertaken by me.

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Academic Year 2023-24

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Place :- Nagpur **Rishita P Jain**

Date :-

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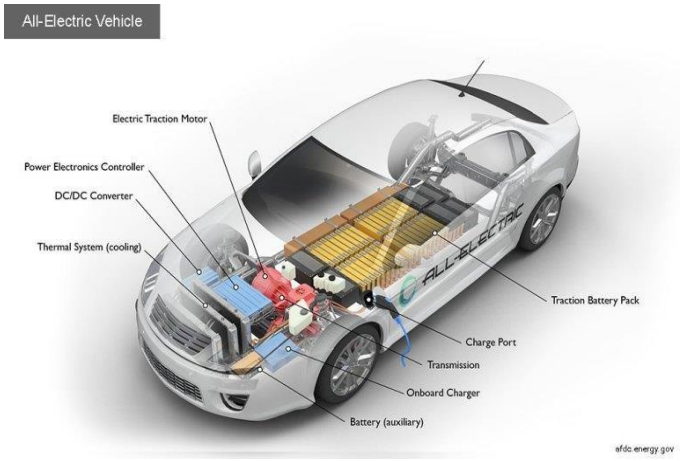
CHAPTER 1: INTRODUCTION TO ELECTRIC VEHICLES

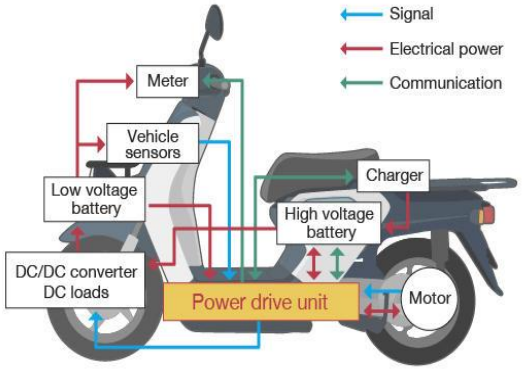
1.1 INTRODUCTION

With the current depletion of fossil fuels and its price hike, there is a need for another energy resource to run the vehicle. The automobile sector is considering Electric Vehicle as a solution to the industry and environment in India. Electric Vehicles are the replacement for petroleum-based vehicles. They are one of the emerging technologies as well as eco-friendly and viable. The replacement of internal combustion engines with electric engines will reduce pollution to a great extent and be profitable to consumers. Many countries around the globe have implemented this technology and are contributing towards betterment of the environment.

1.2 TYPES OF ELECTRIC VEHICLES

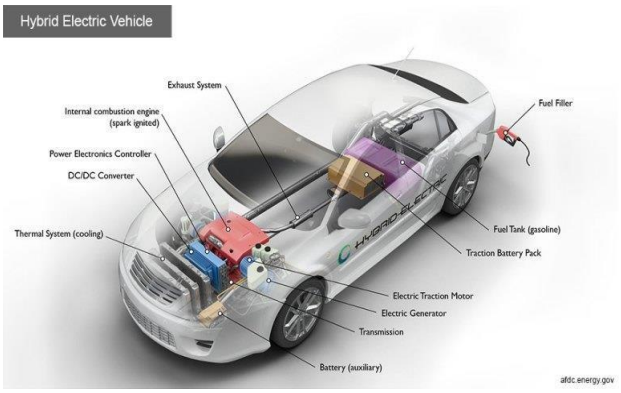
1. Battery Electric Vehicle (BEV)





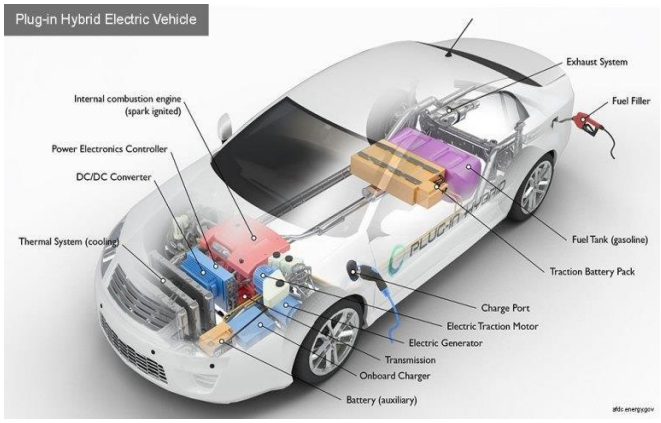
- These are the ones which you call a fully electric vehicle. This electric vehicle type does not contain any other source of actuation other than motors and batteries. There is zero-emission in these vehicles. The battery is charged through an external source of power such as DC fast charger or AC chargers. On average, the BEVs take around 8 hours to get fully charged using an AC charger. This time can be reduced to 1 hour using a DC fast charger. These electric vehicles have a range from 250kms to 500kms depending upon the battery capacity and the motor.
- Some of the 4-wheeler BEVs in India are Tata Nexon EV, Hyundai Kona Electric, Mahindra eKUV100, MG ZS EV and more. 2-wheeler BEVs in India include Ather 450, TVS iQube, Bajaj Chetak Electric.

2. Hybrid Electric Vehicle (HEV)



- These type of electric vehicles are powered by both, fuel as well as electricity. The electricity is generated by the vehicle's own braking system. The heat produced by the brakes is converted into electrical energy. This process of conversion is called Regenerative Braking. The electric motor is used to start off the HEVs. Then the propulsion is taken care of by the IC engine. This ensures better fuel economy. The operation of the engine as well as the motor is controlled by the ECU.
- Some HEVs in India are Toyota Prius Hybrid, Honda Civic Hybrid and Toyota Camry Hybrid. Maruti Suzuki recently introduced its hybrid system in few models too.

3. Plug-in Hybrid Electric Vehicle (PHEV)



4.

- These are types of hybrid electric vehicles which can recharge the batteries through regenerative braking or through the external source of power. The HEVs travel about

3-4kms before the engine is switched on, PHEVs can go up to 65kms before the engine provides the required assistance for the propulsion of the vehicle.

- Some PHEVs in India are Mahindra e-Verito, BMW i8 and the Volvo XC90 T8.

1.3 OPPORTUNITIES OF ELECTRIC VEHICLES

1. Cheaper to operate
    - EVs are cheaper to operate since they have high efficiencies and fuel economies thereby reduce cost for the owner. The electricity to charge an EV is about one third as much per kilometer to purchase fuel for vehicle.

2. Cheaper to maintain
    - BEVs have less moving parts than those had by conventional combustion engine vehicles. There is less servicing and no expensive systems such as fuel injection and exhaust systems, which are not needed in an EV. PHEVs have petrol engine and need servicing hence costing more than BEVs but they also have an electric propulsion system, which requires less moving parts leading to less depletion of petrol engine parts.

3. Environment Friendly
    - EVs are less polluting, as they have zero exhaust emissions. If you opt to use renewable energy to charge your EV, you can reduce greenhouse gas emissions even more. Some EVs are made of eco-friendly materials such as the Ford Focus Electric, which is made of recycled and bio based materials and the Nissan Leaf, which is partly made of recycled plastic bottles, old car parts and second hand appliances.

4. Health Benefits
    - The reduced harmful emissions will lead to better air quality, which is good for our health. EVs are also produce much less noise compared to petrol/diesel-based vehicles.

5. Safer
    - EVs have a low center of gravity thereby making them less likely to capsize. They also have low risk of fires and explosions. Their body construction gives them more durability hence making them safer during collisions.

1.4 CHALLENGES TO BE FACED

1. Cost of EVs
   - The cost of EVs should be reasonable and the EVs produced should hold proper value for money.

2. Efficiency of EVs in India
   - The EVs in India on an average provide around 120 km on a full charge in turn making them unsuitable for long drives.
   - EVs in India **lack speed**, which may turn off buyers. The top two India made EVs have speed of 85 km/hr.

3. Demand for EVs
   - Increase in demand will help in achieving vision 2030.
   - Increase in demand of EVs will lead to increase in requirement for energy and raw materials to for the battery.

4. Vehicle Quality
   - Good vehicle quality will lure more customers.
   - Better quality vehicles ensure trust among customers.

5. Batteries
   - The batteries used by electrics are cars made up of nickel, aluminum, cobalt, graphite and lithium, which are all rare earth materials.
   - The availability of these materials is scarce and the amount of these materials available may not be able to produce enough batteries to power the expected amount of electric vehicles to be produced.
   - The increasing demand for lithium around the globe given its scarcity on the Earth's surface will make it challenging to meet India's EV requirement.

6. Electricity Generation
   - There must be enough electricity generation capacity to meet the increasing demands for charging infrastructure and local consumer utilization.
   - There is presently shortage of electricity in many parts of India and a major part of energy generation of the country is still dependent on fossil fuels.

7. Land Availability
    - Availability of land to setup charging stations in urban areas where land scarcity is present is a difficult task.
    - Moreover, a substation nearby is a requirement for a charging station.

1.5 GLOBAL SCENARIO OF ELECTRIC VEHICLES

- According to the Global EV Outlook 2020, the sales of electric cars reached 2.1 million globally in 2019, surpassing 2018 – already a record year – to boost the stock to 7.2 million EVs.
- In absolute terms, China remained the world's largest EV market, with 2.3 million electric vehicles in active use. To put that into perspective, that's nearly half (45%) of the global stock of EVs. Europe and the US are relatively far behind with 1. 2 and 1.1 million EVs respectively.
- But when it comes to relative terms, the situation in Europe is looking a lot more positive. While only 5.2% of China's vehicles are electric, Norway has 56% of its vehicles running on electricity in 2019.The runners up Iceland and Netherlands have reached 25.5% and 15% EV penetration, respectively.
- In 2019, the number of light electric vehicles globally reached 2 264 400 units, 9 % higher than for 2018. This is a clear deviation from the growth rates of the previous 6 years, which were between 46% and 69%. The reasons for this shift are due to the decrease in sales in the second half of 2019 in the two largest markets, China and the USA.
- But even with the stagnant growth in the two largest markets, global EV sales still grew, largely in part to Europe, which saw 44% growth. This could be attributed to the introduction of WLTP, along with changes in national vehicle taxation and grants.
- In 2019, Europe secured €60 billion in investments to produce EVs and batteries - 19 times more than in 2018. Driven by EU car CO2 targets, industry and governments committed 3.5 times more to EV and battery production in Europe than they did in China.
- Amid COVID-19, the outlook for 2020 global EV sales becomes more difficult. The preliminary EV sales data for January and February is very positive in Europe, encouraging in the USA, but dismal in China, where the total vehicle market was down 80% in February. If quarantines and factory closures continue into Q2, insufficient parts supply affects the global car industry during a longer period.
- While the direction is right, it's good to keep in mind that as of 2019, only 2.5% of the world's passenger vehicles run on electricity. This would suggest that we still have a long road ahead until we can declare electrification a reality.

1.6 INDIAN SCENARIO OF ELECTRIC VEHICLES

- The electric vehicle (EV) market is still in its nascent stage in India. It is expected to grow at a much faster rate, as the government has undertaken various initiatives to promote electric vehicles in the country. The country's budding EV market witnessed a growth of 20% in FY2020 compared to FY2019. In other words, about 1.56 lakh electric vehicles were sold in India (across different categories) last year. EV sales in FY2019 stood at roughly 1.30 lakh units.
- Out of this figure, a good majority of sales were contributed by two-wheelers. To provide a rough breakup, 1.26 lakh two-wheelers (mostly e-scooters), 3,600 cars and 400 buses were sold in the period. Electric three-wheelers or rickshaws are also a major contributor in India's EV sales, but the number has not been taken into account as the segment is a bit unorganised. Still, electric three-wheeler sales in FY2020 is estimated to be around 90,000 units.
- Even though major names in the field of electric mobility are working towards good alternatives to regular ICE examples, data shows that low-speed electric scooters (top speed cut at around 25km/h) that do not require a rider's licence are the top sellers. In fact, they occupied almost 90% of the total EV sales in FY2020.

EV Sales FY 2020

Electric Vehicle	FY 2020	FY 2019	FY 2018
Two Wheelers	1,52,000	1,26,000	54,800
Passenger Vehicles	3,400	3,600	1,200
Total	1,55,400	1,29,600	56,000

- At present, there are two decent electric scooters that could be a worthy alternative to a petrol example: TVS iQube and Bajaj Chetak. Both e-scooters were launched in January 2020 and the former is arguably the better package. So far, sales have collectively hit 109 units from the limited cities in which they are available.
- In the four-wheeler segment, India has got only a few compelling EVs to choose from. This includes Tata Motors' Nexon EV, Hyundai Motor's Kona and MG Motor's ZS EV. Mahindra will soon join the party with its eXUV300 — a direct rival to the Tata Nexon EV. In FY2020, four-wheeler EV sales dropped slightly from about 3,400 units in FY2019.

- The Hyundai Kona was the first proper premium EV to launch in India. In global markets, the electric crossover has received a powertrain upgrade that boosted its performance and range figures. Meanwhile, Hyundai India is reportedly working on a subcompact electric crossover to take on the Tata Nexon EV and Mahindra eXUV300.
- The Indian EV market, as a whole, will take a considerable amount of time to attain a position on par with the ICE segment. However, with major OEMs investing more in electric mobility alongside exclusive tax benefits from the Indian government, we might be able to see some interesting emission-free products at reasonable price tags across different segments.

CHAPTER 2 :- COMPANY PROFILE

Company	Four-Wheeler Electric Vehicles	Two-Wheeler Electric Vehicles
Tata Motors	Tata Nexon EV	-
Mahindra Electric	Mahindra eVerito, Mahindra e2oPlus	-
MG Motor India	MG ZS EV	-
Hyundai	Hyundai Kona Electric	-
Maruti Suzuki	-	-
Hero Electric	-	Wide range including Optima, Photon, NYX, Flash, Dash, and others
Bajaj Auto	-	Bajaj Chetak Electric, Bajaj Pulsar Electric, Bajaj Platina Electric, etc.
TVS Motor Company	-	TVS iQube Electric
Ather Energy	-	Ather 450X, Ather 450 Plus
Revolt Motors	-	Revolt RV400, Revolt RV300

CHAPTER 3: LITERATURE REVIEW

Masurali.A, Surya P, (2018) In terms of carbon emissions, India is responsible for over 18% of them in the transportation sector alone. One of the most viable alternative answers to the issues is the electric vehicle (EV). Several automakers are introducing electric vehicles and diversifying their product lines. Promoting electric vehicles (EVs) can help reduce fuel reliance and pollution, which is good for both customers and the country. People's levels of awareness of EVs are substantially influenced by their education. Apart from manufacturers, the government should make a concerted effort to raise awareness and generate favourable perceptions among potential buyers.

Pritam K. Gujarathi, Varsha A. Shah, Makarand M. Lokhande, (2018) The Indian scenario is unique in that the present market share of electric and plug-in hybrid vehicles is under 0.1 percent. Almost all cars today rely on fossil fuels for propulsion. These damage the atmosphere and contribute to global warming by emitting greenhouse gases. The disparity between petroleum production and demand in the United States is increasing. India imports almost 70% of the oil it needs each year. As a result, there is a pressing need to look at the elements and obstacles that could lead to more sustainable and cleaner alternatives.

John Matias and T.C. Yalcin (2017) "Consumer Perceptions of Electric Vehicles: An Exploratory Study". This study used a survey to explore consumer perceptions of EVs in the United States. The study found that consumers had mixed perceptions of EVs, with concerns about range anxiety, charging infrastructure, and the high cost of EVs identified as key barriers to adoption.

Liao, (2017)"Impact of Government Policies on the Adoption of Electric Vehicles in India". Political concepts of EVs to help governments and car manufacturers evaluate consumer preferences Driving range, refilling time and owning costs have been identified as some of the factors influencing EV purchasing decisions Some studies have used stated preference techniques to explore heterogeneity in consumer preferences when deciding to purchase an Electric vehicle.

David Layzell and Sara Hastings-Simon, (2016) "The Role of Government Incentives in Supporting the Adoption of Electric Vehicles: Insights from a Canadian Study". This study analyzed the impact of government incentives on consumer preferences for EVs in Canada. The study found that financial incentives, such as tax credits and rebates, are an important factor in motivating consumers to purchase EVs.

Anthony Perl and Yehua Dennis Wei (2016) "Predicting Electric Vehicle Adoption in the United States: The Role of Income, Social Influence, and Perceived Infrastructure". This study used a survey to predict EV adoption rates in the United States. The study found that income, social influence, and perceived infrastructure were key predictors of EV adoption. Specifically, the study found that consumers with higher incomes, who were influenced by friends and family, and who perceived a greater availability of charging infrastructure were more likely adopt EVs.

Rezvani, Jansson, and Bodin, (2015)"Electric Vehicles in India: An Analysis of the Drivers, Challenges, and Opportunities". Give an overview of EV adoption studies; however, they only focus on individual-specific psychological factors which influence people's intention for Electric vehicle adoption and only select some representative studies. Our review complements it in the following ways: First, we review a wider range of influential factors in Electric Vehicle adoption other than psychological constructs only; second, we present a comprehensive picture of current research by collecting all the available academic Electric vehicle preference studies

Benjamin K. Sovacool, Sabine Hielscher, and Johannes Kester, (2015) "Investigating the Role of Social Influence on the Adoption of Electric Vehicles: Evidence from a Stated Preference Study in Germany". This study investigated the role of social influence on consumer preferences for EVs in Germany. The study found that social norms and peer influence can play a significant role in shaping consumer preferences for EVs.

Sudhir Kumar and R.K. Kumar, (2015) "Challenges and Opportunities for Electric Vehicles in India: A Review". The authors analyze the key challenges and opportunities for electric vehicle adoption in India, including infrastructure development, battery technology, and government policies.

Karen Vancluysen and Philippe Crist, (2013) "Consumer Preferences for Electric Vehicles: A Literature Review". This literature review summarizes the findings from various studies on consumer preferences for EVs. The study found that consumers are primarily motivated by environmental concerns and the potential cost savings associated with EV ownership. However, the limited driving range of EVs and the lack of charging infrastructure were identified as key barriers to adoption.

S. A. Bhat and B. Subhash, (2013) "The Impact of Government Policies on Electric Vehicle Adoption in India". The authors examine the role of government policies in promoting the adoption of electric vehicles in India including incentives, regulations, and funding programs.

M Pierre, C Jemelin, N Louvet, (2011) “Electric Vehicle Industry in India: Market Potential, Regulations, and Future Trends”. Comparable cases have occurred during the last decades-probably more modest but full of learning: some local authorities have promoted innovations based on electric vehicles in the 1990s, and some people have chosen this kind of cars for their daily travels, Reporting studies carried out in 2006 and 2008, we intend to identify the reasons of this innovative modal choice, to show the difficulties that electric vehicle drivers then encountered and to analyze the patterns of use that governed their mobility and their use of electric vehicles.

R. Sridhar and P. Raj Kumar, (2011) “The Electric Vehicle Market in India”. This study provides an a-depth analysis of the Indian EV market, including trends, consumer preferences, and future projections.

Neumann, (2010) “Electric Vehicle Industry in India: A SWOT Analysis”. Environmental perspective, increase in high CO2-emissions and depletion of Fossil reserves, the roll out of Electric vehicle can be perceived as a safety measure and future security. Technology to be used in the upcoming EV is very mature and uptrend leading to high distance coverage with efficiency and comfort.

Hoyer (2008)"Electric Vehicle Adoption in India: Challenges and Opportunities". The technology behind Electric vehicles exists for more than a century. However, due to the availability and the ease of use of combustion engines, electric driving was put on hold. Today, different (pushing and pulling) factors recover the interest in Electric vehicles. On the pushing side, the limited oil supply, and the rising awareness of the environmental footprint of conventional combustion engine vehicles lead the way to cleaner Electric vehicle. On the pulling side, recent developments in battery technology and electric motors make the Electric vehicle a valid contester for conventional cars.

Jayashree S and B.G. Fernandez, (2007) “An Overview of Electric Vehicles and Their Charging Infrastructure in India”. In this paper, the authors review the current status of electric vehicles in India, including their adoption rate, market size, and regulatory policies.

R. K. Jain, S. K. Dhankhar, and H. S. Bhatia, (2005) “Assessment of Electric Vehicle Charging Infrastructure in India”. The authors evaluate the current state of electric vehicle charging infrastructure in India, including the availability and accessibility of charging stations.

Chan, (2002) “Environmental challenges force the transportation sector to move to eco-friendlier technologies”. Electric Vehicles (EVs) are regarded as a green transportation

solution. The main focus of the paper is on batteries as it is the key component in making electric vehicles more environment-friendly, cost-effective and drives the EVs into use in day-to-day life

CHAPTER 3: BUSINESS ENVIRONMENT OF ELECTRIC VEHICLES

3.1 GOVERNMENT INITIATIVES FOR PROMOTING EVs IN INDIA

As India is also slowly moving towards formulating an effective EV policy, here is a rundown of different policies that are in place in India:

1. India Central Government EV Policy
    - The central government of India launched the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme for a two-year period at an approved outlay of INR 795 Cr in 2015. The scheme, extended till September 2018, focussed on technology development, demand creation, pilot projects and charging infrastructure.
    - Under phase II of FAME, the government is planning to extend financial support of INR 8,730 Cr for three years. The government will be largely focussing on the deployment of electric buses on the Indian roads. This move comes from the response received by the centre during the first phase FAME from 2015-2018 when it received around 47 proposals which demanded deployment of 3,144 buses across 44 cities. There is no fixed timeline mandated by any government (state or central) to complete the transition of state transport union (STU) buses to EVs.
    - 5595 electric buses have been sanctioned to 64 cities and the related STUs. 5095 units out of it are for intra-city transport. Currently, there are approximately 1.95 lakh buses under several STUs in India. The fund support includes INR 2,500 Cr for buses, INR 1,000 Cr for four-wheelers, INR 600 Cr for two-wheelers (with maximum speed greater than 25 km) and INR 750 crore for high speed three-wheelers. With this policy, the central government is planning to prioritise the development of public transportation, shared mobility, and smaller electric vehicles such as two-wheelers.
    - The government-backed Energy Efficiency Services Ltd (EESL) has issued tenders for 20K EVs to be deployed across the country for government use. With this the government aims an EV sales penetration of 30% for private cars, 70% for commercial cars, 40% for buses, and 80% for two- and three-wheelers by 2030.
    - The government, in a recent move, has approved green license plates for electric vehicles in order to encourage people to use them. The purpose behind is their easy identification for proposed benefits such as concessional toll, preferential treatment for parking and free entry in congested zones.

2. Andhra Pradesh EV Policy
    - The policy released by the Andhra government mainly focusses on promoting innovation through grants and venture funds to research organisations, incubators and startups working on next-generation battery technology, fuel cell technologies, EV

power trains and EV electronics and enable investment in charging/battery-swapping infrastructure and hydrogen generation and fueling station development.

- The government plans to attract combined investments of more than INR 30K Cr in the next five years with an employment potential for 60,000 people. It also targets to bring in manufacturing units of high-density energy storage of at least 10GWh capacity in the next five years to cater to both domestic as well as export market. The complete APSRTC bus fleet of over 11K buses will be converted into electric buses (BEVs/FCEVs) by 2029, the government has claimed with the first phase of 100% conversion of the bus fleet in top 4 cities by 2024.

3. Bihar EV Policy
    - Still in the draft phase, Bihar Electric Vehicle Policy 2019 is aimed at the creation of manufacturing ecosystem for e-vehicles in the state, fulfilling sustainable development goals in the transport system and making Bihar the most preferred investment destination for EV sector.
    - Mission of the state policy: End manual paddling of rickshaws in the state and upgrade them into 100% electric mobility by 2022
    - Create fast-charging stations at every 50 km on state highways/national highways in the state
    - Attract on-ground investments of INR 2,500 Cr and create direct empowerment opportunities for 10K persons in the state

4. Karnataka EV Policy
    - Karnataka government formulated the policy in September 2017. The policy mainly aims to create an environment that would attract investments of INR 31K Cr and also create employment opportunities for 55K people. It aims to make Karnataka the preferred destination for development of electric mobility and to develop human capital to meet the needs of the industry. Being one of the early policymakers, the state provides incentives like interest-free loans on the net SGST for EV manufacturing enterprises. Karnataka also plans to develop charging infrastructure as a commercially viable business venture that attracts private investment.

5. Kerala EV Policy
    - Kerala plans to build world-class training and skill centres for EV professionals with niche skills for the global EV industry. The policy targets a 200K two-wheelers, 50K three-wheelers, 1K goods carriers, 3,000 buses and 100 ferry boats by 2020.

- The policy has a strong focus on the production side in both the EV value chain and the infrastructure value chain.

6. Maharashtra EV Policy
   - Last year, Maharashtra came up with an effective EV policy to develop Maharashtra as the leader in EV manufacturing and use of EV and promote export of EV, components, battery and charging equipment.
   - It aims to increase the number of EVs registered in Maharashtra to 5 Lakh and grab an investment of INR 25K Cr in EV manufacturing and component manufacturing, battery manufacturing/assembly enterprises and charging infrastructure equipment manufacturing in the state. The policy also offers incentives for the purchase of e- buses and buyers and end-users of private vehicles.

7. Madhya Pradesh EV Policy
   - Madhya Pradesh also joined the EV bandwagon this year with the main objective to promote sustainable electric mobility and bring about a material improvement in Madhya Pradesh air quality by bringing down emissions from the transport sector. To do so, this policy will seek to drive the rapid adoption of electric vehicles in a manner where they contribute to 25% of all new public transport vehicles registrations by 2026.
   - This policy will also seek to put in place measures to support the creation of jobs in driving, selling, financing, servicing, charging and manufacturing of EVs. It further provides incentives like free parking, free road tax/registration, swappable battery to e-rickshaws, financial aid from the DUTF (Dedicated Urban Transport Fund) for electric buses.

8. Delhi/NCR EV Policy
   - Delhi being the state with utmost need for clean mobility thanks to its problems with pollution, the updated policy released in late 2019 aims to bring down emissions from the transport sector. The policy aims at pushing rapid adoption of battery electric vehicles (BEVs) with the goal of their constituting 25% of all new vehicle registrations by 2023. The policy prioritises two-wheelers, three-wheelers, public transport (bus) and taxi fleets. Delhi plans to add 50% e-buses to public transport by 2023.
   - The state reportedly also plans to encourage long-term investment by dealers and charging facility providers to create enabling conditions for private and public charging infrastructure. Delhi's policy provides a unique electricity tariff for EV

charging and encourages discoms to work with owners of residential and non-residential buildings to ensure adequate power supply infrastructure for the installation of these charging points. Additionally, the policy also promises that the state will have public charging infrastructure at least every 3 Km.

9. Tamil Nadu EV Policy
    - Like other states, TN also aims to attract huge investment for the EV industry in the state. The state has set a goal of INR 500 Bn in investment in EV manufacturing and created a comprehensive EV ecosystem in the state and thereby targetting the creation of 1.5 Lakh new jobs. The policy aims to:
    - Create robust infrastructure for electric vehicles including adequate power supply and network of charging points with favourable power tariff.
    - Promote innovation in EV for automotive and shared mobility by providing the ecosystem and infrastructure to make Tamil Nadu, the EV hub of India.
    - Create a pool of skilled workforce for the EV industry through the technical institutions available in the State and create new jobs in the EV industry.
    - Make Tamil Nadu the preferred destination for electric vehicles and component manufacturing units including battery and charging infrastructure.

10. Telangana EV Policy
    - India's newest state Telangana aims to attract investments worth $3 Bn and create employment for 50K people by 2022 through EVs in shared mobility, charging infrastructure development and EV manufacturing activities. It also clearly defines incentives on the demand and supply side of the EV ecosystem, draws a clear roadmap for developing charging infrastructure in the state and provides incentives related to various components of ownership cost of Electric Vehicles.
    - There is also an emphasis on skill development for EV design, development & manufacturing and aims to promote manufacturing of battery cells and packs through special status/ incentives. The Telangana government targets 100% electric buses by 2030 for intra-city, intercity and interstate transport with 25% targeted by 2022 and 50% by 2025.

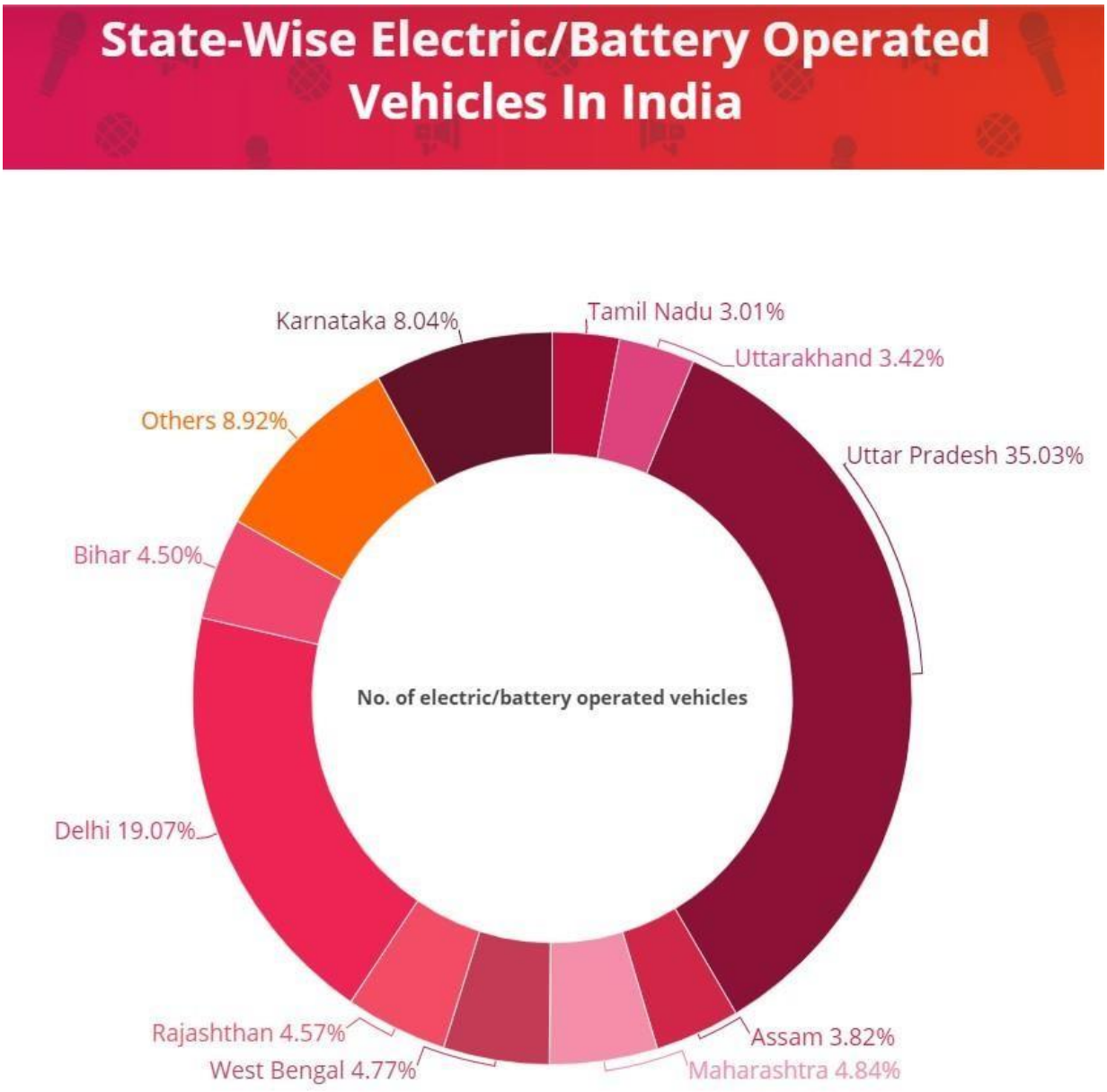
11. Uttar Pradesh EV Policy
    - Drafted this year, the policy encourages the use of HEVs and plug-in EVs during the transition phase. It targets 2 lakh (200,000) charging (fast, slow and swapping) stations by 2024 and 1 Mn EVs on the road in all categories and 70% electric vehicles in public transport by 2030.

- The state offers incentives such as capital interest subsidy, infrastructure interest subsidy, industrial quality subsidy, exemption from stamp duty and electricity duty, SGST reimbursement etc. for EV manufacturing units – large, medium, small and micro alike. It also has a single window system in place for all approvals for EV and battery manufacturing units.

12. Uttarakhand EV Policy

- The policy aims to promote the adoption of EVs to create a clean Uttarakhand and establish the state as a preferred destination for EV and EV component manufacturing. The policy talks about 100% electrification of public transport (e- buses), shared mobility including e-bike-taxis and goods transport using electric 2W, 3W and 4W and other mini goods-transport vehicles in five priority cities by 2030.

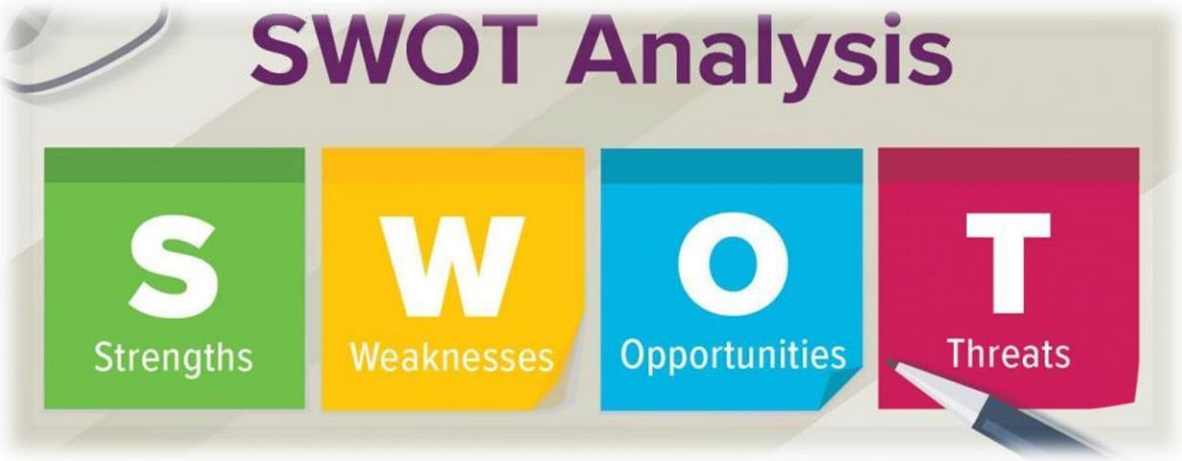
3.2 STATE WISE ELECTRIC VEHICLES IN INDIA



- Uttar Pradesh has the highest registered e-vehicles i.e. 1.39 Lakh
- Delhi comes in second on the list with 75.7K registered e-vehicles
- It is speculated that these figures include mostly e-rickshaws and shuttles

- As the government aims for 30% electric mobility in the country by 2030, the EV adoption index has an altogether different story to tell. In a statement to the Lok Sabha, Minister Of Road Transport And Highways, Nitin Gadkari said that India has 3.97 Lakh registered electric/battery operated vehicles as of July 9.
- The minister also gave state-wise bifurcation of the registered electric vehicles. The details showed that Uttar Pradesh has the highest registered e-vehicles i.e. 1.39 Lakh. It was followed by Delhi and Karnataka at 75.7K and 31.94K respectively.
- The least number of electric vehicles were registered in Arunachal Pradesh with 13, followed by Dadra and Nagar Haveli, Meghalaya and Mizoram at 14, 17 and 18 respectively. Last updated on 15 July 2019.
- The staggering difference between the adoption rates between these states raises bigger questions on state-wise adoption of electric vehicles. The figure is contradicting to the reports that India recorded sales of over 7.5 Lakh EVs in FY2019 as opposed to 56K in FY18. This included the sale of 1.2 Lakh two-wheelers, 6.3 Lakh three-wheelers and 3,600 passenger vehicles.
- An ET report said that most of the vehicles in the government list are electric rickshaws and e-carts, based on quotes from unnamed sources. These class of vehicles got legal clearance in March 2015 and are recognised as motor vehicles officially.
- It is speculated that the actual number of electric vehicles would be much more than the official figure. For one, thousands of electric rickshaws have been operating across country without registration. Secondly, the data may not include figures from electric two-wheeler and electric bicycle sales, and may also not have covered electric cars and four-wheelers being operated by mobility startups and automotive companies.
- NITI Aayog had proposed that only electric vehicles should be sold in India by 2030. For this, it called for full electric transition for three-wheelers by 2023 and two-wheelers with an engine capacity less than 150 CC by 2025.
- The government on its part is taking initiatives such as exemption of registration fees of electric vehicles and has also emphasised heavily on EVs in the Union Budget 2019. Finance Minister Nirmala Sitharaman proposed a new scheme which will invite global companies through a transparent competitive bidding process to set up mega manufacturing plants in sunrise and advanced technology areas including lithium storage batteries, and charging infrastructure.

3.3 SWOT ANALYSIS OF THE EV INDUSTRY IN INDIA



STRENGTHS

1. Eco-friendly: EVs are less polluting, as they have zero exhaust emissions. If you opt to use renewable energy to charge your EV, you can reduce greenhouse gas emissions even more. Some EVs are made of eco-friendly materials such as the Ford Focus Electric, which is made of recycled and bio based materials and the Nissan Leaf, which is partly made of recycled plastic bottles, old car parts and secondhand appliances.

2. No Noise pollution: Like any other pollution, noise pollution is a nuisance to society. Regardless of how personalized a sound the make, EVs have the potential to reduce traffic noise in parking areas and residential streets, improving quality of life for ourselves and our neighbours.

3. Low cost of ownership: Electric vehicles have low cost of ownership as you just have to purchase the vehicle once and then just recharge the battery unlike refueling with petrol or diesel which is far more expensive than the electricity prices in India.

4. Cheaper to run: EVs are cheaper to run since they have high efficiencies and fuel economies thereby reduce cost for the owner. The electricity to charge an EV is about one third as much per kilometer to purchase fuel for vehicle.

5. Health Benefits: The reduced harmful emissions will lead to better air quality, which is good for our health. EVs are also produce much less noise compared to petrol/diesel- based vehicles.

WEAKNESSES

1. Need's time to recharge: Electric vehicles need time to recharge. You have to charge your vehicle for 4-8 twice or thrice a week. This can be a drawback of electric vehicles as the charging process is time consuming.

2. Lack of recharging infrastructure: as the concept of electric vehicles is new and not very popular in our country yet therefore its recharging infrastructure is also not widely available in most of our country.

3. Batteries change is expensive: the batteries of electric vehicles are very expensive right now. There once your battery life is over battery change can be very expensive. This is another weakness of electric vehicles.

OPPORTUNITIES

1. Government subsidy for ownership: Government is providing various subsidies for both manufacturing and the purchasing of electric vehicles. It is providing subsidies to the manufacturers for the production of EVs and on the other hand it is also providing subsidies to buyers for its purchase.

2. Lower Taxes: Government has lowered the taxes on the manufacturing and the purchase of electric vehicles. This tax reduction is a great opportunity for both the Automakers and the buyers to manufacture and buy more EVs respectively.

3. Increasing fossil fuel costs: the increasing cost of fossil fuel is a great opportunity for the EV Industry in India. The increasing cost of fossil fuel will make petrol and diesel expensive and difficult to afford. People will look for a cheaper mobility solution and EVs are the best option for them.

THREATS

1. Competition in form of electric hybrids, alternative fuel, hydrogen-powered cars: there is a lot of competition in the EV industry in the form of electric hybrids, alternative fuels and hydrogen powered cars. All this can be a substitute for electric vehicles and therefore it's a threat for the industry.

2. Rise in cost of electricity: if the cost of electricity increases in future it can be a huge threat for the EV Industry in India as the whole business of electric vehicles is dependent upon the cheap availability of electricity.

3.4 PORTER'S FIVE FORCES ANALYSIS

Threat of new Entrants

1. Dominance of East Asian companies in EV sector: there is a huge dominance of East Asian companies like Toyota in the EV segment. They see that there is a huge potential for their business in India. As these companies have better technology therefore they can be a threat to our Indian Companies.

2. Reduction in import duties: reduction in import duties by the Indian government has encouraged new entrants in the EV Industry. Many foreign companies are coming to India thereby increasing the competition in our country.

3. Presence of skilful labour: Our country is full of engineers therefore there is a good presence of skilled labour required for the manufacturing of electric vehicles. Therefore there is a threat of new entrants in the EV Industry in India.

Bargaining power of Buyers

1. High – price: as the electric vehicles are expensive in our country and the import duties are also very low, therefore buyers have an option of importing it from outside world. Therefore, buyers have good bargaining powers in the EV Industry in India.

2. Customer services and support: the customer service and support in terms of electric vehicles is good therefore the bargaining powers of buyers are more than that of sellers in the EV Industry.

3. Second Hand Market: the development of second-hand market gives more bargaining power in hands of the buyers as the buyers can easily purchase the same model of EV in the second-hand market of almost half the price.

4. Imports by Individuals: as the electric vehicles are expensive in our country and the import duties are also very low, therefore buyers have an option of importing it from outside world. Therefore, buyers have good bargaining powers in the EV Industry in India.

Bargaining power of Suppliers

1. The wide networks of dealerships available: the wide networks of dealerships available gives buyers a lot of choice to purchase from and therefore they have more bargaining power over the sellers.

2. Create brand loyalty: creating brand loyalty increases the bargaining power of suppliers. But right now, the bargaining power is with buyers in the EV Industry in India.

3. Rate of registration: the rate of registration of electric vehicles is less as compared to conventional vehicles. This gives the bargaining power to the buyers and not the sellers.

Threat of Substitute products

1. Public transports: public transport can be a substitute for electric vehicles and therefore it can be a threat for the Electric Vehicle Industry in India.

2. Similarity of products: nowadays many similar products are available in the market. When a variety of similar products are available, buyers get a lot of choices to choose from which increases their bargaining power over sellers.

3. Easier to use in day-to-day life of conventional cars: Conventional vehicles are also other substitutes for the electric vehicles and therefore a threat for the Industry.

Intensity of Competitive Rivalry

1. Huge growth potential: EV Industry has a huge growth potential therefore it is attracting a lot of Players in the Industry. Further increasing the intensity of Competitive Rivalry.

2. Fight for potential buyers: There are various automotive companies who fight for potential buyers of electric vehicles. A strong competition and a high power of buyers results in an intense rivalry in the electric vehicle industry.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 DEFINITION OF RESEARCH: -

According to Philip Kotler,

"Marketing research is the systematic design, collection, analysis & reporting of data & findings relevant to a specific marketing situation facing the company".

4.2 RESEARCH PROBLEM STATEMENT: -

With the current depletion of fossil fuels and its price hike, there is a need for another energy resource to run the vehicle. The automobile sector is considering Electric Vehicle as a solution to the industry and environment in India. Electric Vehicles are the replacement for petroleum-based vehicles. They are one of the emerging technologies as well as eco-friendly and viable.

4.3 OBJECTIVES OF RESEARCH: -

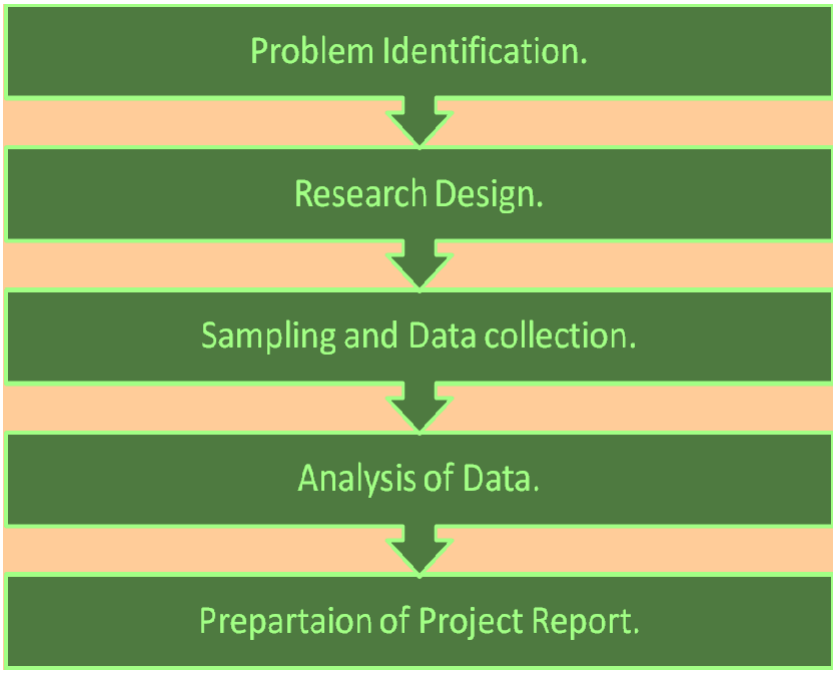
- To study and understand about the electric vehicle in India.
- To know the customer preference on electric vehicles in Nagpur.
- To study the customer satisfaction level towards electric vehicles.
- To know about the benefits of electric vehicle in India.
- To examine the factors which discourage the consumer to buy electric vehicles.

4.4 RESEARCH METHODOLOGY:

The aim of the methodology section is to describe the research procedure. The following are the steps that describe the marketing research process:

- Problem identification & Research objectives.
- Research Design.

- Sampling Plan & Data Collection.
- Data Analysis & Interpretation.
- Research Report Preparation.



4.5 RESEARCH DESIGN

"Research Design is the plan, structure, & strategy of investigation to obtain answers to the Marketing Problem". It indicates the methods and procedures for conducting a research study. There are three types of Research Design.

- Exploratory Research Design
- Descriptive Research Design
- Causal or Experimental Research Design

The Research design carried out in this project was Descriptive in nature.

4.6 DATA COLLECTION

- Data can be collected by 2 methods:

4.6.1 PRIMARY DATA

When secondary data is not sufficient for the purpose the first hand data i.e. Primary Data is to be collected. Following are the instruments of primary data given as follows:

- Observation
- Personal Interview
- Telephonic Interview
- Questionnaire

I have collected Primary Data through Structured Questionnaire.

4.6.2 SECONDARY DATA

This data has been collected through Websites, Project Reports, and various Journals of Marketing etc.

4.7 SAMPLING PLAN

4.7.1 Sample Unit

- Youths

4.7.2 Sample Size

- 150 Respondents

4.7.3 Sampling Methods

- Non- probability sampling:
  a. Judgmental Method
  b. Convenience Method

4.8 DATA ANALYSIS AND INTERPRETATION

Once the survey is over and Questionnaire has been received from respondents the data collection has to be properly tabulated. I have analyzed the data with the help of various statistical methods i.e. Average, Percentage, Correlation and Graphical methods like pie-chart, bar chart table and others.

- TYPES OF CHART
  - Column Chart.
  - Pie Chart.
  - Other charts

4.9 RESEARCH REPORT PREPARATION

Once the data has been tabulated interpreted and analyzed it is requiring to prepare research report based on findings, conclusion and recommendation.

4.10 LIMITATIONS

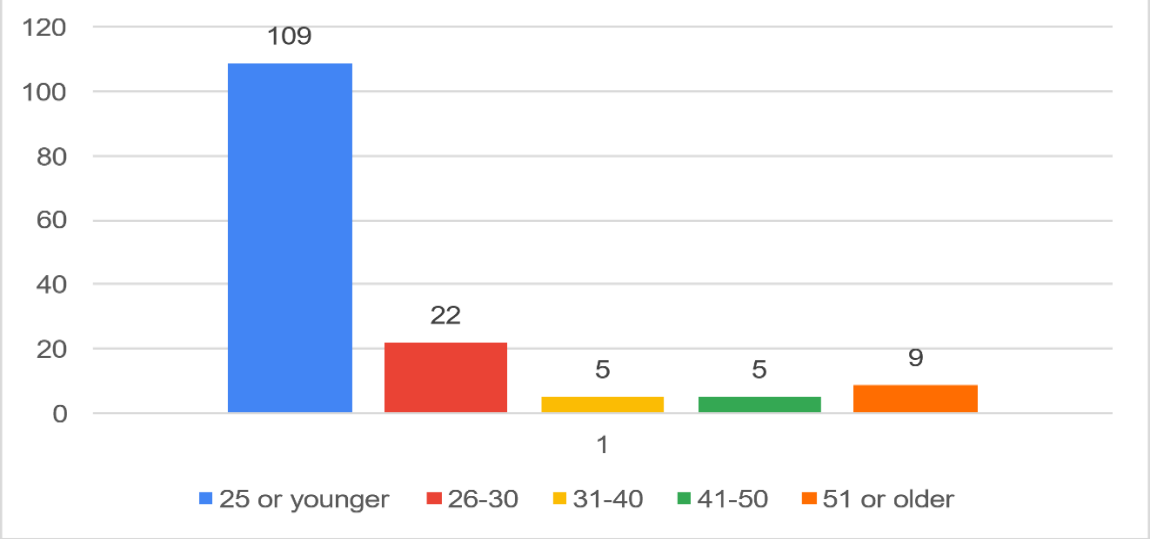
- The responses of the questionnaire are as per the limited understanding of the respondents.
- The size of sample was limited because of limited factor and hence the results cannot be generalized.
- The analysis and conclusions are as per our limited understanding of the concern subject.
- Generally, the respondents were busy in their work and were often found less interested in responding righty.

CHAPTER 5: DATA ANALYSIS

5.1 TOOLS USED FOR ANALYSIS-FREQUENCY TABLES

1. What is your age ?

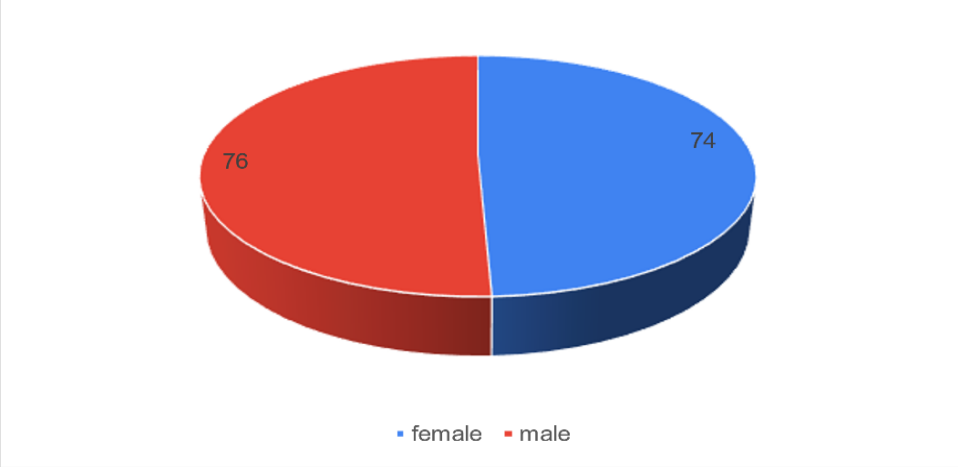
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25 or younger	109	72.7	72.7	72.7
	26-30	22	14.7	14.7	87.3
	31-40	5	3.3	3.3	90.7
	41-50	5	3.3	3.3	94.0
	51 or older	9	6.0	6.0	100.0
	Total	150	100.0	100.0	



From the above Bar Chart, we can observe that the maximum no. of respondents belongs to the age group of 25 or younger (109) while the least number of respondents belonged to the age group of 31 to 40 (5).

2. What is your gender ?

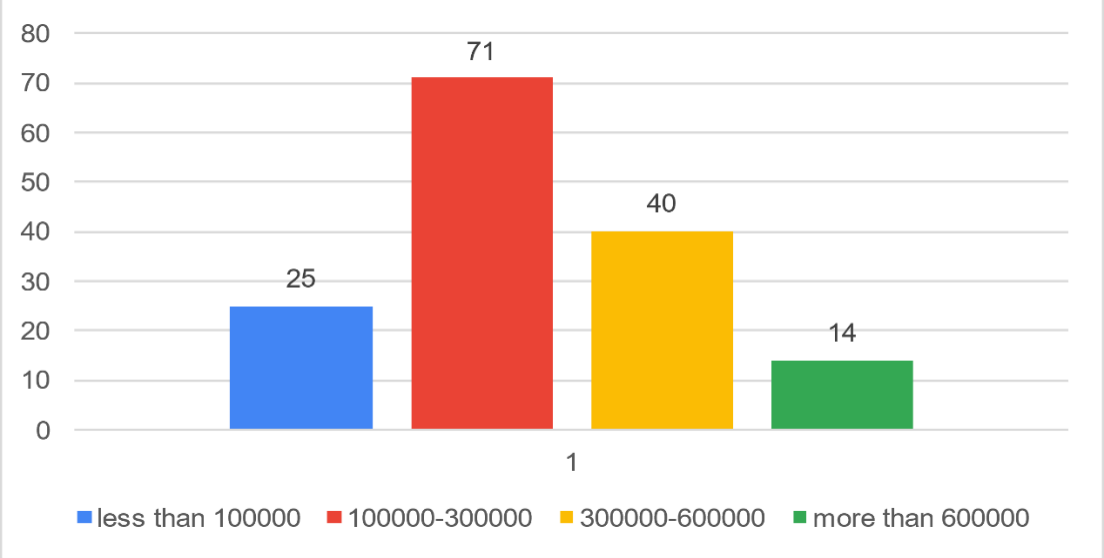
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	74	49.3	49.3	49.3
	male	76	50.7	50.7	100.0
	Total	150	100.0	100.0	



From the above Pie chart, we can observe that 74 respondents out of 150 were Female while the other 76 were Male.

3. What is your approximate yearly income ?

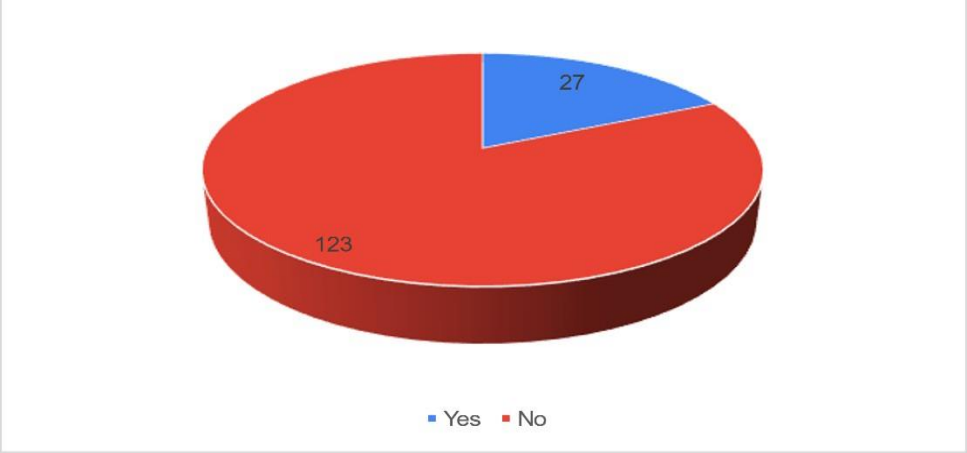
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 100000	25	16.7	16.7	16.7
	100000-300000	71	47.3	47.3	64.0
	300000-600000	40	26.7	26.7	90.7
	more than 600000	14	9.3	9.3	100.0
	Total	150	100.0	100.0	



From the above, Bar Graph we can observe that the income level of maximum number of respondents was 100000 to 300000 (71) while the income level of least number respondents were more than 600000 (14).

4. Do you own an Electric Vehicle ?

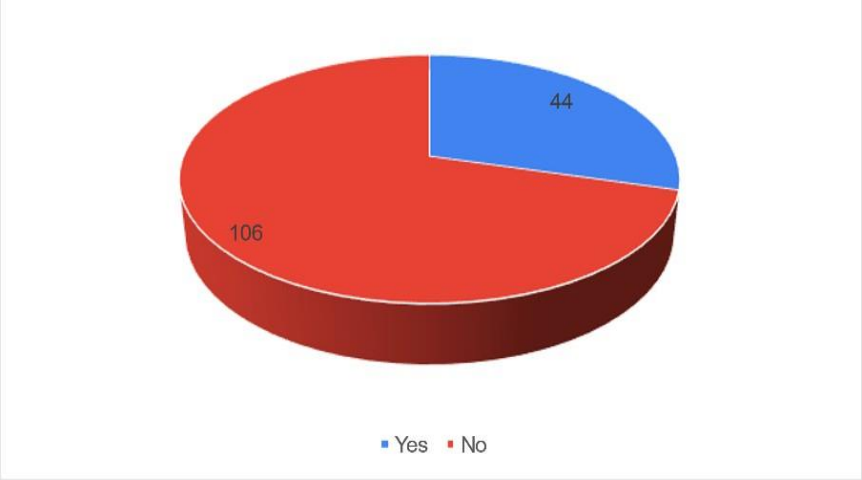
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	18.0	18.0	18.0
	No	123	82.0	82.0	100.0
	Total	150	100.0	100.0	



From the above Pie Chart, we can observe that the majority of the respondents did not Own any Electric Vehicle (123) while just a minority of 27 respondents owned it.

5. Have you ever driven an electric vehicle ?

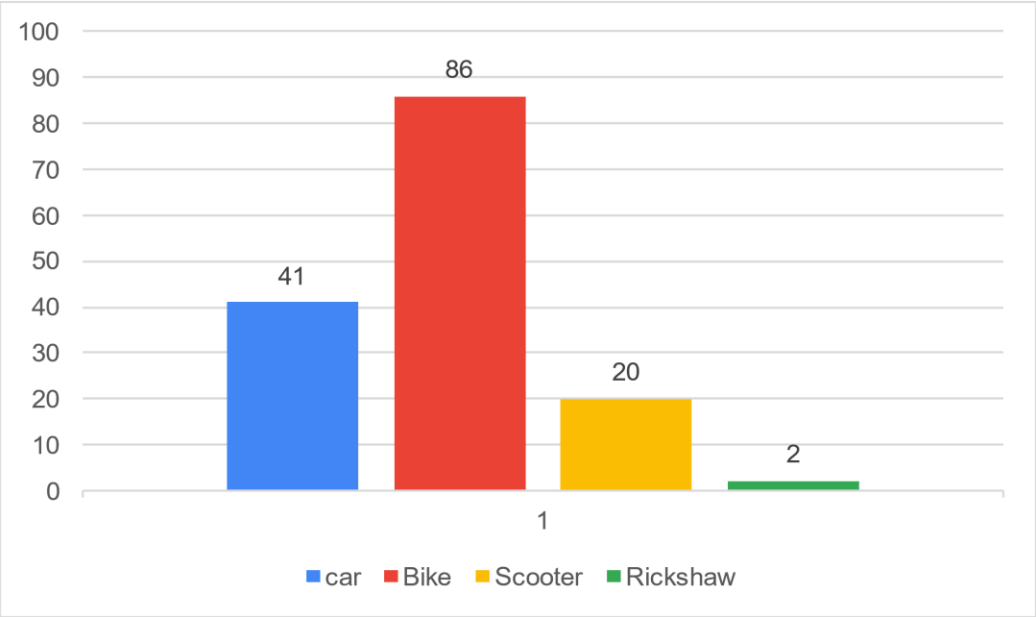
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	29.3	29.3	29.3
	No	106	70.7	70.7	100.0
	Total	150	100.0	100.0	



From the above Pie Chart, we can observe that 70.7 % of the respondents (106) never drove an Electric Vehicle while just 29.3 % of respondents (44) had driven it.

6. Which of the following would you prefer the most if electric modal is available ?

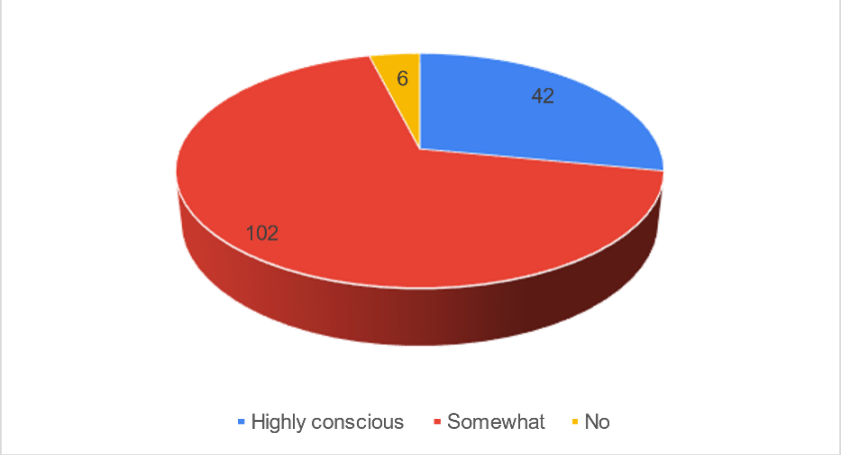
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	car	41	27.3	27.3	27.3
	Bike	86	57.3	57.3	84.7
	Scooter	20	13.3	13.3	98.0
	Rickshaw	2	1.3	1.3	99.3
	other	1	.7	.7	100.0
	Total	150	100.0	100.0	



From the above Bar Graph, we can observe that in case of Electric Vehicle category, maximum preference was given to Bikes followed by Car , Scooter and Rickshaw in the percentage of 57.3, 27.3, 13.3 and 1.3 respectively.

7. Are you environmentally conscious ?

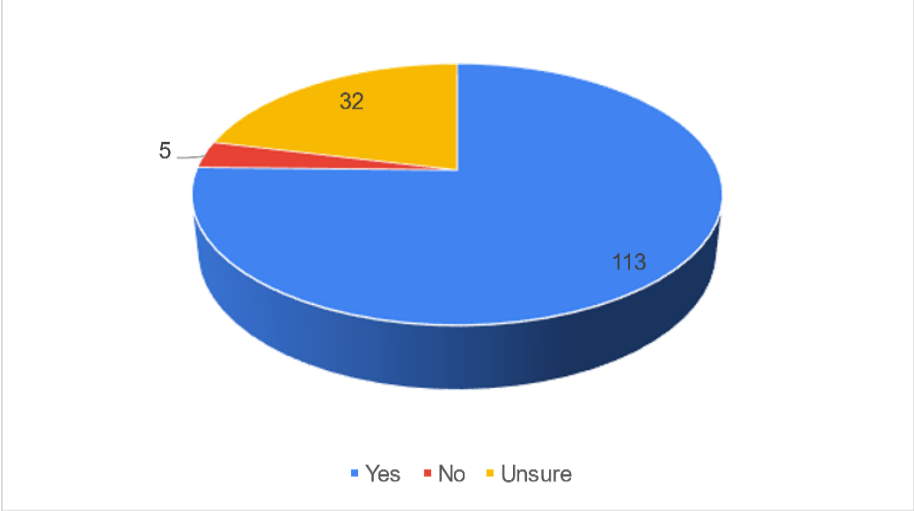
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly conscious	42	28.0	28.0	28.0
	Somewhat	102	68.0	68.0	96.0
	No	6	4.0	4.0	100.0
	Total	150	100.0	100.0	



From the above Pie Chart, we can observe that 28% respondents were highly conscious about the environment, 4% were not conscious at all while a majority of 68% lies some what betwe--en the two.

8. Do you consider owning an electric vehicle as an advantage over owning a gasoline powered vehicle ?

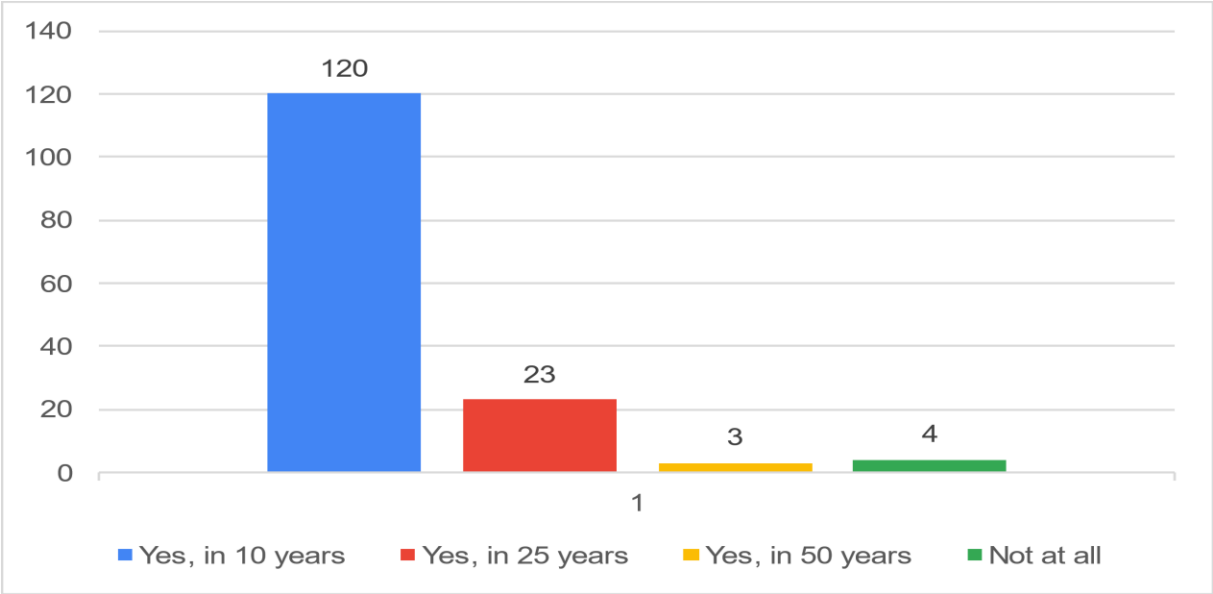
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	113	75.3	75.3	75.3
	No	5	3.3	3.3	78.7
	Unsure	32	21.3	21.3	100.0
	Total	150	100.0	100.0	



From the above Pie Chart, we can observe that 75.3% of the respondents consider owning an Electric vehicle as an advantage over owning a gasoline powered vehicle while 21.3 % are unsure and 3.3% have opposite view point.

9. Do you think electric vehicles will surpass gasoline cars in near future ?

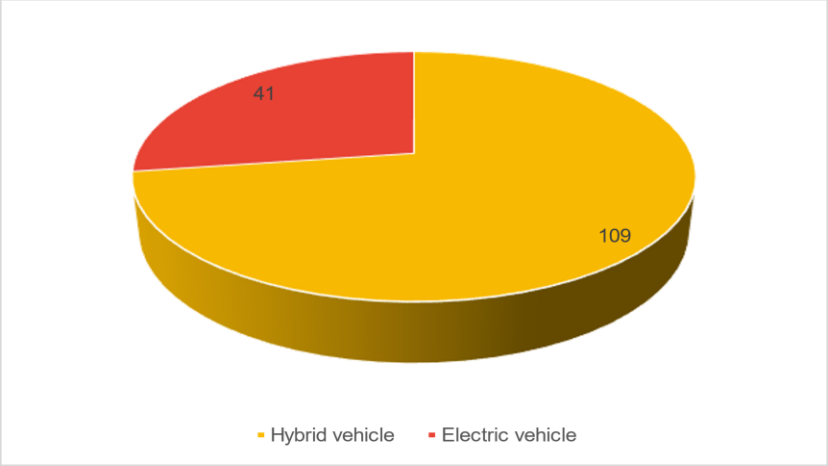
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, in 10 years	120	80.0	80.0	80.0
	Yes, in 25 years	23	15.3	15.3	95.3
	Yes, in 50 years	3	2.0	2.0	97.3
	Not at all	4	2.7	2.7	100.0
	Total	150	100.0	100.0	



From the above Bar Graph, we can observe that 80 % of the respondents think that electric Vehicles will surpass gasoline vehicles in 10 years, followed by 15.3% in 25 years and 2% in 50 years whereas 2.7% i.e. 4 respondents think that EVs will never surpass gasoline vehicles.

10. Do you prefer a hybrid vehicle (use both electricity and fuel) or electric vehicle ?

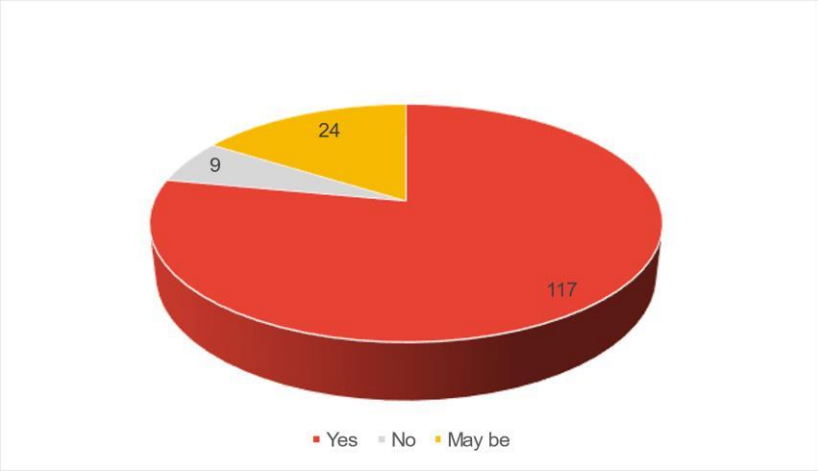
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hybrid vehicle	109	72.7	72.7	72.7
	Electric vehicle	41	27.3	27.3	100.0
	Total	150	100.0	100.0	



From the above Pie Chart, we can observe that the majority of the respondents i.e. 109 prefer Hybrid vehicle (use both electricity and fuel) while only a minority of 41 prefer Electric vehicles.

11. Should the Government provide incentives to buy electric vehicles ?

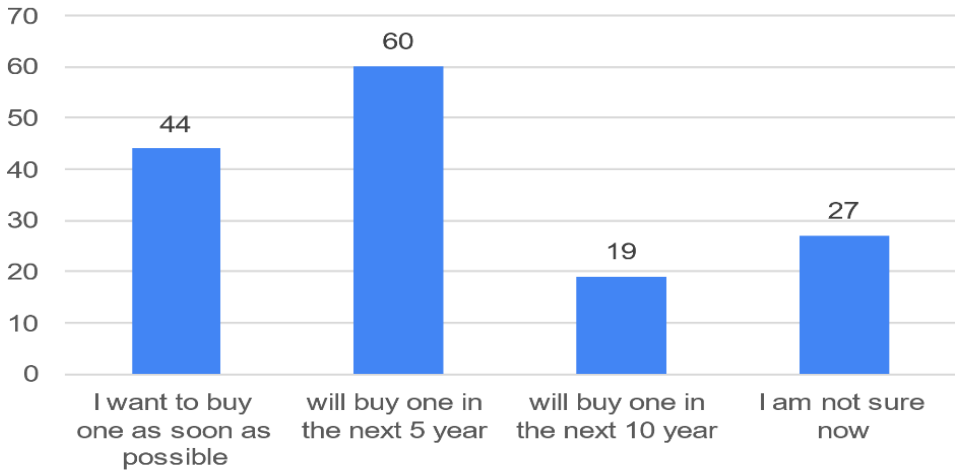
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	117	78.0	78.0	78.0
	No	9	6.0	6.0	84.0
	May be	24	16.0	16.0	100.0
	Total	150	100.0	100.0	



From the above Pie Chart, we can see that a vast majority of respondents i.e. 117 feel that the Government should provide incentives to buy electric vehicles while just a few i.e. 9 oppose it.

12. What are your plans to purchase an electric vehicle ?

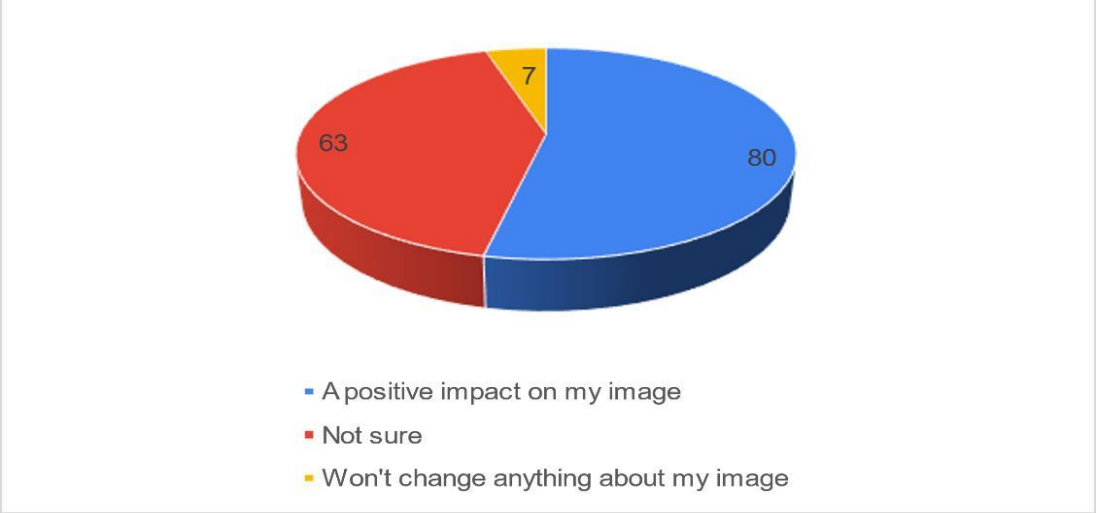
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I want to buy one as soon as possible	44	29.3	29.3	29.3
	will buy one in the next 5 year	60	40.0	40.0	69.3
	will buy one in the next 10 year	19	12.7	12.7	82.0
	I am not sure now	27	18.0	18.0	100.0
	Total	150	100.0	100.0	



From the Bar Graph, we can observe that 40% respondents wish to buy an EV in the next 5 years, 29.3 % wish to buy it as soon as possible, 2.7% wish to buy it in the next 10 years and 18% of them are not sure about their purchase decision yet.

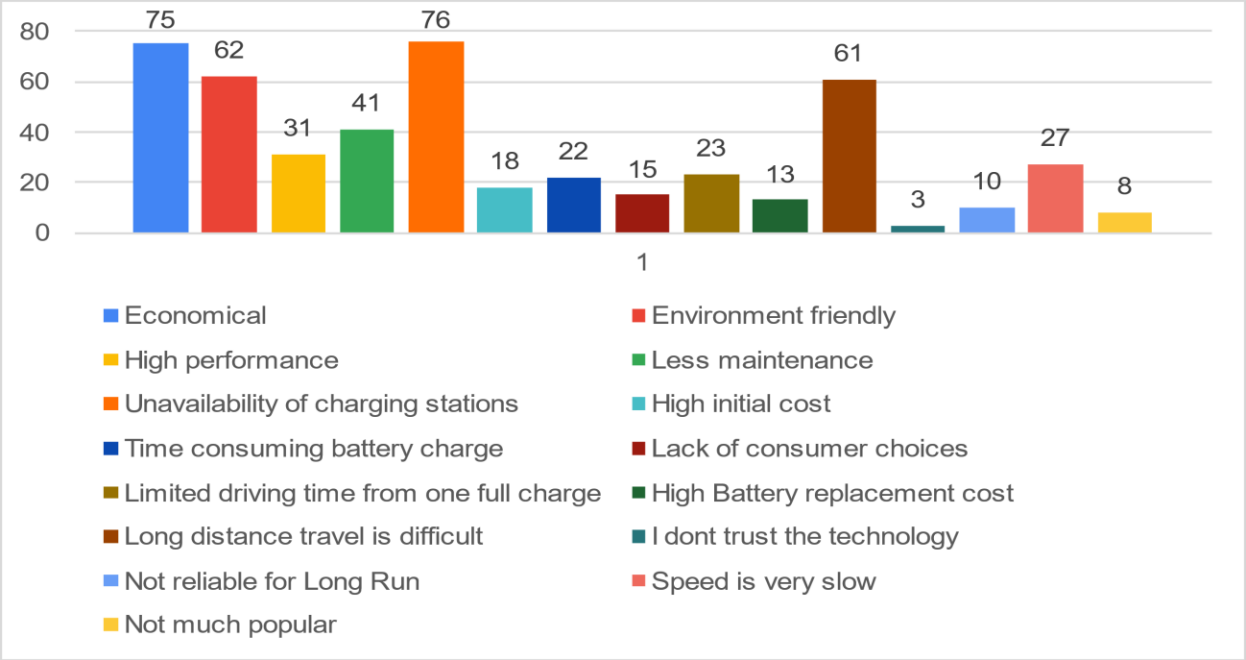
13. How do you think buying an electric vehicle will change your image ?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	A positive impact on my Image	80	53.3	53.3	53.3
	Not sure	63	42.0	42.0	95.3
	Won't change anything about my image	7	4.7	4.7	100.0
	Total	150	100.0	100.0	



From the above Pie Chart, we can observe that 53.3% of the respondents think that buying an Electric Vehicle will bring a positive impact on their image on the contrary 4.7% think that their image will not change at all. While around 42% are still unsure about it.

14. What are the various notions you hold for electric vehicles ?



From the above Bar Graph, we can observe that the most common stereotypes that respondents held for Electric Vehicles are Unavailability of charging stations (51.3%) followed by Econom--cal (50.7%), Environment Friendly (42%), Long distance travel is difficult (40.7%), lack of consumer choices (10%) and so on…

CHAPTER 6: FINDINGS AND CONCLUSION

6.1 FINDINGS:

- The Electric Vehicle Industry has many opportunities in our country. EVs are cheaper to operate, cheaper to maintain, environment friendly, have health benefits, low risk of fire and explosions.
- The EV Industry is facing some challenges too. Some of these are high initial cost, lack of demand, lack of charging stations, limited driving time from one full charge etc
- The government initiatives for promoting Electric Vehicles are moderately successful in our country. Many people are taking benefits of the subsidies provided by the govt. on electric vehicles in India.
- Uttar Pradesh has the highest number of registered e-vehicles i.e. 1.39 Lakh. Delhi comes in second on the list with 75.7 K registered e-vehicles.
- According to the survey, 29.3% respondents wish to buy an electric vehicle as soon as possible, 40% wish to purchase it in the next 5 years and 2.7% wish to purchase it in the next 10 years.

RESEARCH HYPOTHESIS:

Null Hypothesis H0 : The decision to switch a vehicle from petrol and diesel vehicles to Electric Vehicles is not dependent on one's knowledge and awareness about the pollution caused by fuel emissions , Income of the consumer & EV's cost.

Alternate Hypothesis H1 : The decision to switch a vehicle from petrol and diesel vehicles to Electric Vehicles is dependent on one's knowledge and awareness about the pollution caused by fuel emissions , Income of the consumer & EV's cost.

6.2 CONCLUSION:

- Electric vehicles in India hold significant potential for reducing pollution and dependency on fossil fuels, but require substantial investment in infrastructure and government incentives to achieve widespread adoption.
- Customer preference for electric vehicles in India is increasing steadily.
- "Overall, customers exhibit a high level of satisfaction with electric vehicles."
- Electric vehicles offer significant benefits in India, including reduced emissions, lower operating costs, and enhanced energy security.
- "High initial cost, limited charging infrastructure, and range anxiety are key factors discouraging consumers from buying electric vehicles."

Null Hypothesis H0 : The decision to switch a vehicle from petrol and diesel vehicles to Electric Vehicles is not dependent on one's knowledge and awareness about the pollution caused by fuel emissions , Income of the consumer & EV's cost.

The consumer is switching over the electronic vehicles because they are more benefited and getting them self advance and also saving fossil fuels and getting them free from pollution.

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APPENDIX-A
QUESTIONNAIRE

Dear Respondent,

Here we have a set of questions for a short survey about Electric Vehicles. If you would answer these questions, we would get an insight what you people think about Electric Vehicles. This survey is anonymous and is used for the academic research purpose only. No individual will be identified and responses will only be viewed in aggregate.

1. What is your age ?

- 25 or younger
- 26-30
- 31-40
- 41-50
- 51 or older

2. What is your gender ?

- Male
- Female
- Other

3. What is your approximate yearly income ?

- Less than 100,000
- 100,000 – 300,000
- 300,000 – 600,000
- More than 600,000

4. Do you own an Electric Vehicle ?

- Yes
- No

5. Have you ever driven an electric vehicle ?

- Yes
- No

6. Which of the following would you prefer the most if electric modal is available ?

- Car
- Bike
- Scooter
- Rickshaw
- Other

7. Are you environmentally conscious ?

- Highly conscious
- Somewhat
- No

8. Do you consider owning an electric vehicle as an advantage over owning a gasoline powered vehicle ?

- Yes
- No
- Unsure

9. Do you think electric vehicles will surpass gasoline cars in near future ?

- Yes, in 10 years
- Yes, in 25 years
- Yes, in 50 years
- Not at all

10. Do you prefer a hybrid vehicle (use both electricity and fuel) or electric vehicle ?

- Hybrid vehicle
- Electric vehicle

11. Should the Government provide incentives to buy electric vehicles ?

- Yes
- No
- May be

12. What are your plans to purchase an electric vehicle ?

- I want to buy one as soon as possible
- Will buy one in the next 5 years
- Will buy one in the next 10 years

- I am not sure now
- I have no intention of buying electric vehicles

13. How do you think buying an electric vehicle will change your image ?

- A positive impact on my image
- Not sure
- Won’t change anything about my image

14. What are the various notions you hold for electric vehicles ?

- Economical
- Environment friendly
- High performance
- Less maintenance
- Unavailability of charging stations
- High initial cost
- Time consuming battery charge
- Lack of consumer choices
- Limited driving time from one full charge
- High battery replacement cost
- Long distance travel is difficult
- I don’t trust the technology
- Not reliable for long run
- Speed is very slow
- Not much popular